
NASA-07115 (September 1999)
NATIONAL AERONAUTICS NASA
AND SPACE ADMINISTRATION Superseding NASA-07115
(March 1999)

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09/99

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SECTION 07115

BITUMINOUS DAMPPROOFING
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NOTE: Delete, revise, or add to the text in this
section to cover project requirements. Notes are
for designer information and will not appear in the
final project specification.

This section covers dampproofing exterior and
interior walls below and above grade by means of
coal-tar pitch and asphalt coatings.

Drawings must indicate concrete and masonry walls to
be dampproofed.

PART 1 GENERAL

1.1 REFERENCES

NOTE: The following references should not be
manually edited except to add new references.
References not used in the text will automatically
be deleted from this section of the project
specification.

The publications listed below form a part of this section to the extent
referenced:

ASTM INTERNATIONAL (ASTM)

ASTM D 140	(1993) Standard Practice for Sampling Bituminous Materials
ASTM D 1668	(1994) Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing
ASTM D 173	(1994) Standard Specification for Bitumen-Saturated Cotton Fabrics Used in Roofing and Waterproofing

ASTM D 43	(1994) Standard Specification for Creosote Primer Used in Roofing, Dampproofing, and Waterproofing
ASTM D 449	(1989; R 1994) Standard Specification for Asphalt Used in Dampproofing and Waterproofing
ASTM D 450	(1996; R 2000e1) Standard Specification for Coal-Tar Pitch used in Roofing, Dampproofing, and Waterproofing

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS SS-C-153	(Rev C) Cement, Bituminous, Plastic
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1.2 SUBMITTALS

NOTE: Review submittal description (SD) definitions in Section 01330, "Submittal Procedures," and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

The following shall be submitted in accordance with Section 01330, "Submittal Procedures," in sufficient detail to show full compliance with the specification:

SD-03 Product Data

Manufacturer's catalog data shall be submitted for the following items:

Creosote Primer
Coal-Tar Pitch
Coal-Tar-Saturated Fabric Reinforcement
Mastic Fibrous Asphalt
Semi-Mastic Fibrous Asphalt

SD-04 Samples

Contractor shall submit the following samples:

Three 1-quart 1-liter containers each of Bitumen, Creosote Primer, Emulsion, Mastic Fibrous Asphalt, and Semi-Mastic Fibrous Asphalt.

Three pieces, 12 inches 300 millimeter by the width of the roll, of Woven Glass Fabric or Cotton Reinforcement Fabric.

SD-06 Test Reports

Test reports for the following items shall be in accordance with the paragraph entitled, "Bitumen Sampling and Testing," of this section.

Asphalt
Coal-Tar Pitch

SD-07 Certificates

Certificates shall be submitted for the following items showing conformance with referenced standards contained in this section.

Hot-Applied Dampproofing Materials
Cold-Applied Dampproofing Materials

1.3 QUALIFICATIONS FOR DAMPPROOFING WORK

Bituminous dampproofing shall be installed by mechanics experienced and specializing in this type of work. Supervisory personnel assigned to this project shall have a minimum of [5] [_____] years of experience in bituminous dampproofing. Personnel working pursuant to this section may, at the Contracting Officer's option, be required to demonstrate technical competence by performing sample work [and/or by displaying their state qualifications/certificates] at no additional cost to the Government.

1.4 BITUMEN SAMPLING AND TESTING

Bitumen shall be sampled and tested in accordance with ASTM D 140 and as follows:

[Asphalt for dampproofing shall meet or exceed the physical requirements listed in ASTM D 449, Table I, and shall be sampled and tested for softening point, flash point, penetration, ductility, loss on heating, bitumen soluble in carbon disulfide, bitumen soluble in carbon tetrachloride, ash, and coarse particles.]

[Coal-Tar Pitch for dampproofing shall meet or exceed the physical requirements listed in ASTM D 450, Table I, and shall be sampled and tested for water, specific gravity, softening point, flash point, distillation, ductility, bitumen soluble in carbon disulfide, and ash.]

1.5 DELIVERY, HANDLING, AND STORAGE

Materials shall be delivered to the site in original, unbroken, and labeled packages. Only approved materials shall be brought to the site.

Fabric rolls shall be labeled to indicate grade, weight, and type of saturant.

Materials shall be stored above ground and shall be protected from the weather. Fabric rolls shall be stacked on end and stored in an area

maintained at temperatures not lower than 50 degrees F 10 degrees C for at least 24 hours before use.

1.6 PROTECTION OF PROPERTY

Flame-heated equipment shall be located and used so it will not endanger the structure, other materials on the site, personnel, or adjacent property. Fire extinguishers of an appropriate type and capacity shall be provided and maintained.

Before starting work, the paving and the faces of building walls adjacent to the work shall be protected. Heating kettles shall be placed not closer than 30 feet 10 meter from any structure. Protection shall be maintained for the duration of the work.

Work or materials damaged by this work shall be cleaned, restored to the original condition, or replaced with new materials without additional cost to the Government.

1.7 WEATHER RESTRICTIONS

1.7.1 Inclement Weather

Dampproofing shall not be applied in wet or rainy weather.

Surfaces shall be dry before and during installation of materials.

1.7.2 Cold Weather Limitations

Dampproofing shall be applied when the ambient temperature is no lower than 50 degrees F 10 degrees C unless positive and approved methods are provided to protect the work during and after installation.

PART 2 PRODUCTS

NOTE: Hot-applied dampproofing is preferable for exterior walls below grade under normal conditions. Where hot-applied applications are impractical or where the building foundation has good drainage, cold-applied fibrous asphalt (mastic or semi-mastic) must be used.

2.1 HOT-APPLIED DAMPPROOFING

NOTE: Delete the paragraph heading and the following paragraphs if hot-applied dampproofing is not required.

Hot-Applied Dampproofing Materials shall conform to the following:

Creosote Primer shall conform to ASTM D 43.

Coal-Tar Pitch shall conform to ASTM D 450, Type II, when used in dampproofing below ground level under uniformly moderate temperature conditions.

Coal tar pitch shall conform to ASTM D 450, Type II, when used in dampproofing vertical surfaces above ground and when not exposed to temperatures in excess of 125 degrees F 52 degrees C.

Coal-Tar-Saturated Fabric Reinforcement shall be coal-tar-saturated Woven Glass Fabric conforming to ASTM D 1668 or coal-tar-saturated woven Cotton Reinforcement Fabric conforming to ASTM D 173.

2.2 COLD-APPLIED DAMPPROOFING

NOTE: Delete the paragraph heading and the following paragraphs if cold-applied dampproofing is not required.

Asphalt emulsions are sensitive to moisture and in some cases they may be re-emulsified after application and normal drying. For this reason they must be used with caution on surfaces which will be submerged or subjected to condensation of moisture and are not included in this specification.

Brush, spray, or roller consistency asphalt cutbacks must be considered for the interior face of exterior walls above grade and when the minimum treatment and a nonfibrous type of material is required.

Select the type of material required and delete other selections.

Asphalt emulsions shall be submitted for sampling by the Contractor.

Cold-Applied Dampproofing Materials shall be as follows:

Mastic Fibrous Asphalt shall be a solvent cutback asphalt preparation conforming to FS SS-C-153, Type I. Materials shall be stabilized with bentonite clay to produce a trowel consistency. Mastic shall not sag when applied at the specified thickness and shall remain easily moldable at room temperature after solvent has evaporated.

Semi-Mastic Fibrous Asphalt shall be a solvent cutback asphalt preparation conforming to FS SS-C-153, Type I. Material shall be stabilized with bentonite clay to produce a brush or spray consistency. Material shall not sag when applied at the specified thickness and shall remain easily moldable at room temperature after solvent has evaporated.

PART 3 EXECUTION

3.1 PREPARATORY WORK

Surfaces to receive dampproofing shall be carefully inspected before starting work. Surfaces shall be smooth, clean, dry, free of ice, frost, deleterious substances, and projections. Holes, honeycombs, cracks, and cavities shall be filled and finished flush. Mortar joints shall be neatly struck. Top surfaces of projecting masonry or concrete ledges below grade shall be pitched to drain.

Dampproofing shall not be installed until unsatisfactory surface conditions are corrected.

3.2 HEATING BITUMEN

**NOTE: Delete the paragraph heading and the
paragraph if hot-applied dampproofing is not
required.**

Solid bitumen shall be broken up on a clean surface free of dirt and debris.

Bitumen shall be heated in kettles designed to prevent direct contact of the flame with surfaces in contact with the bitumen. Flue effluent from the combustion system shall not exceed 475 degrees F 246 degrees C. A flue-outlet thermometer shall be installed and kept in calibration and working order. Kettle temperature shall not exceed 375 degrees F 191 degrees C.

Cutting back, adulterating, or fluxing bitumen will not be permitted.

3.3 INSTALLATION

Dampproofing shall be applied in accordance with the manufacturer's printed instructions and as specified.

Temperature of surfaces shall be 40 degrees F 4 degrees C or higher.

Dampproofing shall be applied to the exterior surfaces of walls below grade in locations as indicated and shall extend from the bottom of footing to within 4 inches 100 millimeter of the finished grade.

Dampproofing shall be applied to exterior surfaces of walls enclosing excavated basements or other subsurface spaces indicated.

Walls having brick or stone facing backed by concrete and extending below grade shall have dampproofing applied to the concrete backing up to a line 1 foot 300 millimeter above the finished grade or to the top of the concrete where the concrete does not extend 1 foot 300 millimeter above the grade.

Dampproofing shall be extended to include integral piers and other exterior

wall projections, area walls, and wing walls as indicated.

Dampproofing shall be applied to interior surfaces of concrete and masonry walls where indicated. Dampproofing shall be extended from the floor line to the full height of the wall.

Dampproofing shall be applied to interior surfaces of exterior walls except where such wall surfaces are to be finished walls of rooms. Attic spaces and other unfinished spaces shall have interior surfaces of exterior walls dampproofed. Dampproofing shall be applied to jambs and heads of openings and to all recessed spaces and shall extend to not less than 1 foot 300 millimeter in from exterior walls on interior masonry or concrete walls or partitions, except where the surfaces of such walls or partitions are to be the finished walls of rooms. Wall surfaces behind shower linings and other surfaces so indicated shall be coated with interior dampproofing.

Interior dampproofing shall be applied before wall furring or furring strips are installed.

Finished surface shall be smooth and glossy. Dull or porous areas shall be recoated.

3.4 HOT-APPLIED COAL-TAR PITCH DAMPPROOFING

**NOTE: Delete the paragraph heading and the
following paragraphs if a hot-applied dampproofing
system is not required.**

A uniform brush or roller coat of creosote primer shall be applied at not less than 1 gallon for each 100 square feet 4 liter per 10 square meter. Primer shall be allowed to penetrate and dry.

Specified type of coal-tar pitch shall be mopped into the surface at not less than 25 pounds per 100 square feet 12 kilogram per 10 square meter and allowed to dry.

A second mopping of pitch shall be applied at not less than 25 pounds per 100 square feet 12 kilogram per 10 square meter.

Fabric reinforcement strips shall be applied and embedded completely. Fabric shall not show in the finished surface.

Exterior surfaces shall be given either a priming coat of creosote oil and two mop coats of hot coal-tar pitch or a priming coat of nonfibrous asphalt and two mop coats of hot asphalt. Mop coats shall be applied uniformly using not less than 25 pounds per 100 square feet 12 kilogram per 10 square meter per coat. Pitch or asphalt shall be heated to flow freely but not more than 375 degrees F 191 degrees C for coal-tar pitch and 400 degrees F 204 degrees C for asphalt.

3.5 COLD-APPLIED DAMPPROOFING

**NOTE: Delete the paragraph heading and the
following paragraphs if hot-applied dampproofing is
required.**

3.5.1 Mastic Fibrous Asphalt

Two coats of mastic fibrous asphalt shall be applied by trowel without voids. Material shall not be thinned.

First coat shall be applied using not less than 4-1/2 gallons per 100 square feet 18.5 liter per 10 square meter and shall be allowed to dry for at least 12 hours before application of the second coat.

Fabric reinforcement strips shall be applied and embedded completely in mastic.

A second coat of mastic shall be applied to provide a minimum total thickness of 1/8 inch 3 millimeter for both coats. Rate of application shall be uniform using not less than 4-1/2 gallons per 100 square feet 18.5 liter per 10 square meter.

3.5.2 Semi-Mastic Fibrous Asphalt

Semi-mastic fibrous asphalt shall be uniformly brushed, sprayed, or rolled in a two-coat application applied without voids. Material shall not be thinned.

First coat shall be applied using not less than 2 gallons per 100 square feet 8 liter per 10 square meter and allowed to dry for at least 12 hours before further application.

Fabric reinforcement strips shall be applied as specified and embedded completely in place.

Second coat of mastic shall be applied using not less than 2 gallons per 100 square feet 8 liter per 10 square meter and allowed to dry for at least 12 hours before backfilling.

3.5.3 Asphalt Dampproofing

Asphalt dampproofing shall be uniformly brushed or sprayed on the interior of exterior walls above grade, where indicated, in a two-coat application applied without voids. Asphalt shall not be thinned.

First coat shall be applied at a rate of at least 1-1/2 gallons per 100 square feet 6 liter per 10 square meter of surface and allowed to dry for at least 12 hours before further application.

Second coat shall be applied at a rate of at least 1 gallon per 100 square feet 4 liter per 10 square meter of surface and allowed to dry.

Exterior surfaces shall be given a priming coat of nonfibrous asphalt and a coat of semi-mastic fibrous asphalt applied uniformly using not less than 30 pounds per 100 square feet 14.5 kilogram per 10 square meter to fill pores completely and bond to the wall surface.

3.6 DAMPPROOFING STONE BACKUP

**NOTE: Delete the following paragraph if
dampproofing behind stone facing is not required.**

Masonry backup for stone facings shall be dampproofed with a nonfibrous asphalt dampproofing formulated for stone backup use.

Dampproofing shall be brush-applied to masonry backup in one full covering coat free of voids and skips.

Where indicated, interior surfaces and surfaces back of stone facing shall be given a coat of nonfibrous asphalt and a heavy coat of semi-mastic fibrous asphalt applied uniformly, using not less than 30 pounds per 100 square feet 14.5 kilogram per 10 square meter to cover pores completely and bond to wall surface; or, at the Contractor's option, then may be given a priming and a second coat of asphalt-base emulsion. Priming coat shall be applied in accordance with the manufacturer's printed directions at the rate of 1 gallon per 100 square feet 4 liter per 10 square meter and the second coat at the rate of 3 gallons per 100 square feet 12 liter per 10 square meter of surface.

3.7 FABRIC REINFORCEMENT

Exterior face of dampproofed walls below grade shall be reinforced with the specified fabric reinforcement at construction joints, at the horizontal joints between the bottom of the walls and the tops of the footings, at corners, projections, or changes in plane in walls, and where a wall is penetrated by utility service lines.

Reinforcement shall consist of two plies of fabric strips. First strip shall be at least 12 inches 300 millimeter wide and shall be covered by a second strip at least 18 inches 450 millimeter wide. Each strip shall be laid in and embedded completely with no fabric visible.

3.8 BACKFILLING

**NOTE: Delete the paragraph heading and the
following paragraph where below-grade surfaces are
not to be dampproofed.**

Backfilling shall follow completion of dampproofing as promptly as the work permits.

-- End of Section --